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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/961,441	09/24/2001	* Asad A. Khan	15-875	6812

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EXAMINER

RAO, SHRINIVAS H

ART UNIT PAPER NUMBER

2814

DATE MAILED: 03/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/961,441	<b>Applicant(s)</b> KHAN ET AL.	
	<b>Examiner</b> Steven H. Rao	<b>Art Unit</b> 2814	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18,26 and 35-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-18,26 and 35-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

***DETIALED ACTION***

**PRIORITY**

Receipt is acknowledged of papers filed under 37 CFR 1.114 claiming priority from U.S. Patent Application No. 09/961,441 which papers have been placed in the file.

The filling of request for RCE on 12/ 20/2004 which has been entered on Jan13, 2005 .

**PRELIMINARY AMENDMENT**

The amendment filed on November 01, 2004 has been entered after the filling of the RCE.

Therefore claims 1,4,12,26,35,as amended by the preliminary amendment and presently newly added claims 44-46 and claims 2,4-11,13-18 and 36 to43 as previously recited are currently pending in the Application.

Claims 3,19-25 and 27-34 have been cancelled.

***Information Disclosure Statement***

The Ids originally mailed on December 11, 2001 and February 21, 2202 have been considered and the initialed PTO-1449 enclosed herewith.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a

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person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 to 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. ( U.S. Patent No.6,285,422, herein after Maeda) and further in view of Evanicky et al. ( U.S. Patent No.5,896,119, herein after Evanicky)

With respect to claim 1 Maeda describes A chiral nematic liquid crystal display, comprising:

a) a layer of chiral nematic liquid crystal display material located between first and second substrates, said material including focal conic and planar textures that are stable in an absence of an electric field; ( Maeda col. 13, lines 40-45)

b) drive electronics that electrically address regions of the liquid crystal material effective to cause said liquid crystal material to exhibit the focal conic-and planar textures so as to form an image that is seen by a viewer of the display . ( Maeda col. 9 lines 50-53).

The limitation “ so as to form an image that is seen by a viewer of the display is taken to be a use limitation and may also be considered a sort of product by process limitations. Therefore for any of the above reasons the limitation is not given patentable weight.

c) a bi-directional circular circular polarizer polarizer having opposing sides wherein said- bi-directional circular polarizer circularly polarizes-light incident from either of said opposing sides including passing circularly polarized light to said layer of chiral nematic liquid crystal material.

Maeda does not specifically describes an a bi-directional circular polarizer having opposing sides, wherein said bi-directional circular polarizer circularly polarizes light incident from either of said opposing sides including passing circularly polarized light to said layer of chiral nematic liquid crystal material .

However Evanicky, a patent from the same field of endeavor describes in figure 9 A etc. and col. 12 lines 5 to 20, a bi-directional circular polarizer having opposing sides to provide a LCD a screen having high quality image generation characteristics of a backlight LCD while also being transparent LCD screen.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Evanicky's a bi-directional circular polarizer having opposing sides in Maeda's device. The motivation for making the above combination is to provide a LCD a screen having high quality image generation characteristics of a backlight LCD while also being transparent LCD screen. ( Evanicky\_ col. 1 line s 202-5 and col. 2).

The recitation "said bi-directional circular polarizer circularly polarizes light incident from either of said opposing sides including passing circularly polarized light to said layer of chiral nematic liquid crystal material : ' is a use limitation for which no patentable weight can be given. ( See In re Fuller, and Ex parte Masham).

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d) . a transreflector having a light reflective side and a light transmitting side , the light the light reflective side being adapted to reflect light received from said bi-directional circular polarizer. said bi-directional circular polarizer being located between said transreflector and said first substrate ( Maeda Abstract last two lines).

The limitation" being adapted to reflect light received from said bi-directional circular polarizer" is a use limitation for which no patentable weight can be given. ( See In re Fuller, and Ex parte Masham).

e) a light source that is selectively energizable to emit light said light passing through said transreflector from said light transmitting side toward said light reflecting side. ( Abstract last four lines).

The limitation, " that is selectively energizable to emit light said light passing through said transreflector from said light transmitting side toward said light reflecting side" is taken to be a use limitation for which no patentable weight can be given. ( See In re Fuller, and Ex parte Masham)..

With respect to claim 2 Maeda describes the liquid crystal display of claim 1 wherein said planar texture has a circular polarization of a predetermined handedness. ( This claim is interpreted to mean right handed turn or left handed turn of the light through the circular polarizer as stated in the specification page 2 last line to page 3 line 1-5. described in Maeda col. 23 lines 54-65).

With respect to claim 4 Maeda describes the liquid crystal display of claim 1 wherein said bidirectional circular polarizer comprises a first quarter wave retarder and a second quarter wave retarder and a linear polarizer located between said first quarter wave retarder and said second quarter wave retarder. ( Maeda col. 25 lines 3 to 35,

inherent that when a chiral nematic liquid crystal material is used to convert polarized light to linearly polarized light quarter wave retarders are present ).

With respect to claim 5 describes the liquid crystal display of claim 1 further comprising an alignment material on at least one of said first and second substrates. ( Maeda figure 11).

**B.** Claims 7-18 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. ( U.S. Patent No. 6,285,422 herein after Maeda) in view of Evanicky as applied to as applied to claims 1-5 above and further in view of Aso et al. (U.S. Patent No. 5,965,874, herein after Aso) .

With respect to claims 7 and 8 Maeda describes the liquid crystal display of claim 5.

Maede and Evanicky do not specifically describe wherein light reflected from said display has an S 3 stokes parameter greater than 0.75.

However Aso in col. 41-42 lines 50-55 describes wherein light reflected from said display has an S 3 stokes parameter greater than 0.75 to provide a method and an apparatus for obtaining the polarization characteristics of an optical transmission medium by evaluating the state of polarization of light and estimating the Jones matrix describing the birefringence and polarization mode coupling of transmission medium all of which allows to carefully control and ensure optimum light intensity.

Therefore it would have been obvious to one of ordinary skill in the art at the time

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of the invention to include Aso's teachings of light reflected from said display has an S 3 stokes parameter greater than 0.75 in Maede's device for obtaining the polarization characteristics of an optical transmission medium by evaluating the state of polarization of light and estimating the Jones matrix describing the birefringence and polarization mode coupling of transmission medium all of which allows to carefully control and ensure optimum light intensity. ( Aso cols. 2 to 14).

With respect to claim 6 describes the liquid crystal display of claim 5 wherein said alignment material has a pre tilt angle of about  $21^{\circ}$  from the substrate. ( Maeda col. 9 lines 35 to 55).

It is noted that the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff , 919 F.2d. 1575, 1578, 16 USPQ 2d 1934, 1936 ( Fed. Cir. 1990).

With respect to claims 9 and 10 Maeda describes the liquid crystal display of claim 1 further comprising a rubbed alignment material on both of said first and second substrates. ( well known in the art).

With respect to claim 11 Maeda describes the liquid crystal display of claim 1 wherein said light source has a spectral distribution that matches a reflection spectrum of the display. (inherent property of the material used )

With respect to claim 12 Maeda describes a chiral nematic liquid crystal display,



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comprising:

a) a chiral nematic liquid crystal material located between first and second substrates, said material including a planar texture having a circular polarization of a predetermined handedness and a focal conic texture that are stable in an absence of an electric field; said second substrate being closer to a viewer of the display than first substrate (

Maeda col. 13, lines 40-45).

b) drive electronics that electrically address regions of the liquid crystal material effective to cause said liquid crystal material to exhibit the focal conic-and planar textures so as to form an image that is seen by a viewer of the display . ( Maeda col. 9 lines 50-53).

The limitation “ so as to form an image that is seen by a viewer of the display is taken to be a use limitation and may also be considered a sort of product by process limitations. Therefore for any of the above reasons the limitation is not given patentable weight.

c) a first quarter wave retarder ( Maeda col. 25 lines 3 to 35, inherent that when a chiral nematic liquid crystal material is used to convert polarized light to linearly polarized light quarter wave retarders are present ).

d) a second quarter wave retarder ( Maeda col. 25 lines 3 to 35, inherent that when a chiral nematic liquid crystal material is used to convert polarized light to linearly polarized light quarter wave retarders are present ).

e) a linear polarizer located between said first quarter wave retarder and said second quarter wave retarder; ( Maeda col. 13 line 30).

f) a translector having a reflective side adjacent to said second quarter wave retarder

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and a light transmitting side; (Maeda abstract last 4 lines) . light reflective side being adapted to reflect light received from said second quarter wave retarder wherein said first quarter wave retarder said linear polarizer and said second quarter wave retarder are located between said transreflector and said first substrate; .( rejected for reasons et out under claim 1 above).

and g) a light source that is selectively energizable to emit light said light passing through said transreflector from said light transmitting side toward said light reflecting side. ( Abstract last four lines).

The limitation, " that is selectively energizable to emit light said light passing through said tranreflector from said light transmitting side toward said light reflecting side" is taken to be a use limitation for which no patentable weight can be given. ( See In re Fuller, and Ex parte Masham)..

With respect to claim 13 Maeda describes the liquid crystal display of claim 12 wherein said light source has a spectral distribution that matches a reflection spectrum of the display. ( well known in the art) .

With respect to claim 14 Maeda describes the liquid crystal display of claim 12 further comprising an alignment material on at least one of said first and second substrates. (Maeda figure 11).

With respect to claim 15 Maeda describes the liquid crystal display of claim 14 wherein said alignment material has a pretilt angle of about 21 ° from the substrate. ( Maeda col. 9 lines 35 to 55).

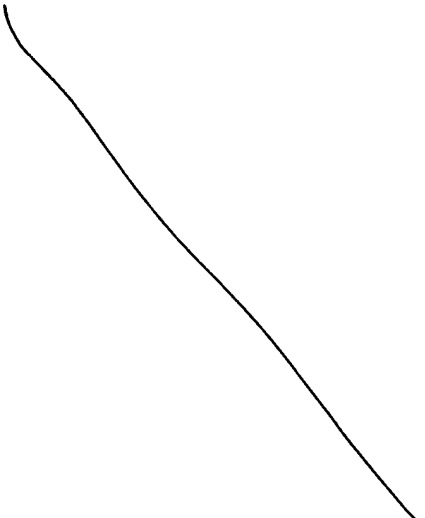
With respect to claim 16 Maeda describes the liquid crystal display of claim 14

wherein light reflected from said display has an S3 stokes parameter greater than 0.75.  
( rejected for same reasons as stated under claims 7 and 8 above).

With respect o claim 17 Maeda describes the liquid crystal display of claim 14 wherein light reflected from said display has an S3 stokes parameter greater than 0.90.  
( rejected for same reasons as stated under claims 7 and 8 above).

With respect to claim 18 Maeda describes the liquid crystal display of claim 12 further comprising a rubbed alignment material on at both of said first and second substrates. ( well known in the art).

With respect to claim 26 Maeda describes a chiral nematic liquid crystal display, comprising: a) a chiral nematic liquid crystal material located between first and second substrates, said material including focal conic and planar textures that are stable in an absence of an electric field, ( Maeda col. 13, lines 40-45) said liquid crystal material reflects light from said display that has an S3 stokes parameter greater than 0.75. said second substrate being closer to a viewer of the display than said first substrate ( rejected for same reasons as stated under claims 7 and 8 above).



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b) drive electronics that electrically address regions of the liquid crystal material effective to cause said liquid crystal material to exhibit the focal conic-and planar textures so as to form an image that is seen by a viewer of the display . ( Maeda col. 9 lines 50-53).

The limitation “ so as to form an image that is seen by a viewer of the display is taken to be a use limitation and may also be considered a sort of product by process limitations. Therefore for any of the above reasons the limitation is not given patentable weight.

b) a bi-directional circular circular polarizer polarizer having opposing sides wherein said- bi-directional circular polarizer circularly polarizes-light incident from either of said opposing sides including passing circularly polarized light to said layer of chiral nematic liquid crystal material. ( rejected for reasons stated under claim 1 above)

d) a transreflector having a reflective side adjacent to said second quarter wave retarder and a light transmitting side; (Maeda abstract last 4 lines) . light reflective side being adapted to reflect light received from said second quarter wave retarder wherein said first quarter wave retarder said linear polarizer and said second quarter wave retarder are located between said transreflector and said first substrate; .( rejected for reasons set out under claim 1 above).and e) a light source that is selectively energizable to emit light said light passing through said transreflector from said light transmitting side toward said light reflecting side. ( Abstract last four lines).

The limitation, “ that is selectively energizable to emit light said light passing through said transreflector from said light transmitting side toward said light reflecting side” is taken to be a use limitation for which no patentable weight can be given. ( See In re Fuller, and Ex parte Masham)..

With respect to claim 35 Maeda describes a liquid crystal display device,

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comprising: a layer of chiral nematic liquid crystal material including focal conic and reflective planar textures that are stable in an absence of an electric field, ( Maeda Col. 13 lines 40-45, Abstract line 8) said layer having a first side and a second side, Maeda Abstract last 2 lines) the second side being closer to a viewer of the display device than said second side; ( Maeda figure 25, see also Claim objection above) means for selectively addressing regions of the liquid crystal material effective to cause said liquid crystal material to exhibit the focal conic and reflective planar textures resulting in an image that can be seen by the viewer of the display device', ( Maeda figures 25 col. 31 line 1 to col. 32 line 29) a bidirectional circular polarizer comprising a first quarter wave retarder ( for reasons stated under rejections of claim 1,12, 26 rejection Maeda col. 13 line 30, Maeda col. 25 lines 3 to 35) a second quarter wave retarder and a linear polarizer located between said first quarter wave retarder and said second quarter wave retarder', ( Madea col. 25 3 to 35, inherent that when a chiral nematic liquid crystal material is used to convert polarized light to linearly polarized light quarter wave retarders are present ) a transreflector having a light reflective side and a light transmitting side, (Maeda abstract last 4 lines), said bi directional circular polarizer being located between said transreflector and said first side of said chiral nematic liquid crystal material ( rejected for reasons stated above) the light reflective side being adapted to reflect light received from said bi-directional circular polarizer', ( inherent property of the light reflective side) and a light source that is selectively energizeable to emit light ( Maeda abstract last 4 lines) and said light passing through said transreflector said light transmitting side toward said light reflecting side. ( see above ).

With respect to claim 36 Maeda describes the liquid crystal display device of claim 35 further comprising an alignment layer in contact with at least one of said sides of said liquid crystal layer, said alignment layer being effective to orient adjacent molecules of said liquid crystal material in a particular direction. ( Maeda figure 2, col. 8 lines 25-30).

With respect to claim 37 Maeda describes the liquid crystal display device of claim 35 wherein said molecules of liquid crystal material are oriented effective to enable light reflected from said display to have an S3 stokes parameter greater than 0.75. ( Aso col. 41-42 lines 50-55)

With respect to claim 38 Maeda describes the liquid crystal display device of claim 35 wherein said molecules of said liquid crystal material are oriented effective to enable light reflected from said display to have an S3 stokes parameter greater than 0.90. ( rejected for reason set out under claim 17 above).

With respect to claim 39 Maeda describes the liquid crystal display device of claim 35 further comprising stacked layers of said chiral nematic liquid crystal material. ( Aso figure 2).

With respect to claim 40 Maeda describes the liquid crystal display device of claim 39 wherein one of said stacked layers of said chiral nematic liquid crystal material is selected to have a pitch length effective to reflect visible light of one color and another of said stacked layers of said chiral nematic liquid crystal material is selected to have a pitch length effective to reflect visible light of a different color. ( Maeda col.5 lines 50-65, Aso figures 1,2 ).

With respect to claim 41 Maeda describes the liquid crystal display device of claim 39 comprising a triple stack of said liquid crystal layers, wherein one of said layers reflects red light, one of said layers reflects green light and one of said layers reflects blue light. ( Maeda col. 5 lines 60-65, Aso figures 1-2 ).

With respect to claim 42 Madea describes the liquid crystal display device of claim 39 wherein one of said stacked layers of said chiral nematic liquid crystal material is selected to have a pitch length effective to reflect visible light of one color and another of said stacked layers of said chiral nematic liquid crystal material is selected to have a pitch length effective to reflect infrared electromagnetic radiation. ( Maeda col.5 lines 60-65, different wavelength including –infra red range).

With respect to claim 43 Madea describes the liquid crystal display device of claim 35 wherein said means for selectively addressing regions of the liquid crystal material comprises drive electronics that electrically address regions of the liquid crystal material effective to cause said liquid crystal material to exhibit the focal conic and planar textures so as to form an image that is seen by the viewer of the display device. ( Maeda describes watches , computer etc. all of which include displays with electronic drives).

44. (New) A liquid crystal display comprising: a layer of chiral nematic liquid crystal display material including focal conic and reflective planar textures that are stable in an absence of an electric field, said layer having a first side and a second side, the second side being closer to a viewer of the display than the first side; drive electronics that electrically address regions of the liquid crystal material effective to

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cause said liquid crystal textures so as to form an image that material to exhibit the focal conic and is seen by the viewer of the display; planar a bi-directional circular polarizer having opposing sides, wherein said bi-directional circular polarizer circularly polarizes light incident from either of said opposing sides including passing circularly polarized light to said layer of chiral nematic liquid crystal material; a transflector having a light reflective side and a light transmitting side, said bi-directional circular polarizer being located between said transflector and said first side of said layer of chiral nematic liquid crystal material, the light reflective side being adapted to reflect light received from said bi-directional circular polarizer; and a light source that is selectively energizable to emit light, said light passing through said transflector from said light transmitting side toward said light reflecting side (rejected for same reasons as stated under claim 1, claim 44 differs from claim 1 in not identifying the LCD as chiral nematic which is also disclosed by Maeda and Evanicky).

Similarly claims 45 (equivalent to claim 12), claim 46 (equivalent to claim 26) are rejected for reasons set out under claims 12, 26 and 44 above.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-18, 26 and 35-43 have been considered but are moot in view of the new ground(s) of rejection.



Any inquiry concerning this communication or earlier communication from the



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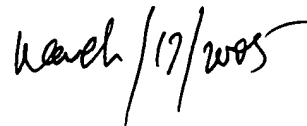
Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (571) 272-1718. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:30 p.m.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'SR' with a stylized flourish. There are three small asterisks above the first part of the signature.

Steven H. Rao

Patent Examiner

Handwritten text in black ink, reading 'March 17/2005' with a signature-like flourish at the end.